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Monthly Research Update

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This monthly newsletter features the latest research publications by Bank of Canada economists. The report includes papers appearing in external publications and staff working papers published on the Bank of Canada's website.

PUBLISHED PAPERS

In-Press

Alpanda, Sami & Cateau, Gino & Meh, Cesaire, "A Policy Model to Analyze Macroprudential Regulations and Monetary Policy", Canadian Journal of Economics Special: The Renewal of The Bank of Canada's Inflation-Control Target, Volume 51(3), 828-863

Champagne, Julien & Poulin-Bellisle, Guillaume & Sekkel, Rodrigo, "The Real-Time Properties of the Bank of Canada's Staff Output Gap Estimates", Journal of Money, Credit and Banking, Volume 50(6), 1167-1188

Dorich, Jose & Labelle St-Pierre, Nicholas & Lepetyuk, Vadym & Mendes, Rhys, "Could a Higher Inflation Target Enhance Macroeconomic Stability?", Canadian Journal of Economics Special: The Renewal of The Bank of Canada's Inflation-Control Target, Volume 51(3), 828-863

Forthcoming

Ahnert, Toni & Anand, Kartik & Gai, Prasanna & Chapman, James, "Asset Encumbrance, Bank Funding and Fragility", Review of Financial Studies

Bailliu, Jeannine & Han, Xinfen & Kruger, Mark & Liu, Yu-Hsien & Thanabalasingam, Sri, "Can Text Analytics Help Explain and Forecast Labour Market Outcomes in China?", International Journal of Forecasting

Crawford, Gregory S. & Shcherbakov, Oleksandr & Shum, Matthew, "Quality Overprovision in Cable Television Markets", American Economic Review

Djeutem, Edouard & Nguimkeu, Pierre, "Robust Learning in the Foreign Exchange Market", B.E. Journal of Macroeconomics

Jo, Soojin & Karnizova, Lilia & Reza, Abeer, "Industry effects of oil price shocks: A re-examination", Energy Economics

Pasricha, Gurnain Kaur & Falagiarda, Matteo & Bijsterbosch, Martin & Aizenman, Joshua, "Domestic and Multilateral Effects of Capital Controls in Emerging Markets", Journal of International Economics

Pichette, Lise & Robitaille, Marie-Noëlle & Salameh, Mohanad & St-Amant, Pierre, "Dismiss the output gaps? To use with caution given their limitations", Economic Modelling

STAFF WORKING PAPERS

Alexander, Patrick & Keay, Ian, "Responding to the First Era of Globalization: Canadian Trade Policy, 1870–1913", Bank of Canada Staff Working Paper 2018-42

Ahnert, Toni & Perotti, Enrico, "Seeking Safety", Bank of Canada Staff Working Paper 2018-41

Cao, Shutao & Meh, Césaire & Rios-Rull, José-Victor & Terajima, Yaz, "The Welfare Cost of Inflation Revisited: The Role of Financial Innovation and Household Heterogeneity", Bank of Canada Staff Working Paper 2018-40

Jain, Monica, "Sluggish Forecasts", Bank of Canada Staff Working Paper 2018-39

STAFF DISCUSSION PAPERS

Chernis, Tony & Sekkel, Rodrigo, "Nowcasting Canadian Economic Activity in an Uncertain Environment", Bank of Canada Staff Discussion Paper 2018-9

ABSTRACTS

A Policy Model to Analyze Macroprudential Regulations and Monetary Policy

We construct a small-open-economy, new Keynesian dynamic stochastic general-equilibrium model with real financial linkages to analyze the effects of financial shocks and macroprudential policies on the Canadian economy. The model incorporates rich interactions between the balance sheets of households, firms and banks, long-term household and business debt, macroprudential policy instruments and nominal and real rigidities and is calibrated to match dynamics in Canadian macroeconomic and financial data. We study the transmission of monetary policy and financial and real shocks in the model economy and analyze the effectiveness of various policies in simultaneously achieving macroeconomic and financial stability. We find that, in terms of reducing household debt, more targeted

tools such as loan-to-value regulations are the most effective and least costly, followed by bank capital regulations and monetary policy, respectively.

The Real-Time Properties of the Bank of Canada's Staff Output Gap Estimates

We study the revision properties of the Bank of Canada's staff output gap estimates since the mid-1980s and show that the average revision has been significantly smaller since the early 2000s. Alternatively, revisions from econometric output gap estimates have not experienced a similar improvement. We show that the overestimation of potential output in real time following the 1991–92 recession explains the large revisions in the first half of the sample. Although Phillips-curve inflation forecasts slightly worsen when conditioned on real time instead of final gaps, their relative poor performance reflects the general lack of inflation predictability rather than real-time gap measurement issues.

Could a Higher Inflation Target Enhance Macroeconomic Stability?

Recent international experience with the effective lower bound on nominal interest rates has rekindled interest in the benefits of inflation targets above 2%. We evaluate whether an increase in the inflation target to 3% or 4% could improve macroeconomic stability in the Canadian economy. We find that the magnitude of the benefits hinges critically on two elements: (i) the availability and effectiveness of unconventional monetary policy (UMP) tools at the effective lower bound and (ii) the level of the real neutral interest rate. In particular, we show that when the real neutral rate is in line with the central tendency of estimates, raising the inflation target yields some improvement in macroeconomic outcomes. There are only modest gains if effective UMP tools are available. In contrast, with a deeply negative real neutral rate, a higher inflation target substantially improves macroeconomic stability regardless of UMP.

Asset Encumbrance, Bank Funding and Fragility

We model asset encumbrance by banks subject to rollover risk and study the consequences for fragility, funding costs, and prudential regulation. A bank's privately optimal encumbrance choice balances the benefit of expanding profitable yet illiquid investment, funded by cheap long-term senior secured debt, against the cost of greater fragility from runs on unsecured debt. We derive testable implications

about encumbrance ratios. The introduction of deposit insurance or wholesale funding guarantees induces excessive encumbrance and fragility. Ex-ante limits on asset encumbrance or ex-post Pigovian taxes eliminate such risk-shifting incentives. Our results shed light on prudential policies currently pursued in several jurisdictions

Can Text Analytics Help Explain and Forecast Labour Market Outcomes in China

The official Chinese labour market indicators have been seen as problematic, given their small cyclical movement and their only-partial capture of the labour force. In our paper, we build a monthly Chinese labour market conditions index (LMCI) using text analytics applied to mainland Chinese-language newspapers over the period from 2003 to 2017. We use a supervised machine learning approach by training a support vector machine classification model. The information content and the forecast ability of our LMCI are tested against official labour market activity measures in wage and credit growth estimations. Surprisingly, one of our findings is that the much-maligned official labour market indicators do contain information. However, their information content is not robust and, in many cases, our LMCI can provide forecasts that are significantly superior. Moreover, regional disaggregation of the LMCI illustrates that labour conditions in the export-oriented coastal region are sensitive to export growth, while those in inland regions are not. This suggests that text analytics can, indeed, be used to extract useful labour market information from Chinese newspaper articles.

Robust Learning in the Foreign Exchange Market

This paper studies risk premia in the foreign exchange market when investors entertain multiple models for consumption growth. Investors confront two sources of uncertainty: (1) individual models might be misspecified, and (2) it is not known which of these potentially misspecified models is the best approximation to the actual data generating process. Following Hansen and Sargent (2010), agents formulate 'robust' portfolio policies. These policies are implemented by applying two risk-sensitivity operators. One is forward-looking, and pessimistically distorts the state dynamics of each individual model. The other is backward-looking, and pessimistically distorts the probability weights assigned to each model. A robust learner assigns higher weights to worst-case models that yield lower continuation values. The magnitude of this distortion evolves over time in response to realized consumption growth. It is shown that robust learning not

only explains unconditional risk premia in the foreign exchange market, it can also explain the dynamics of risk premia. In particular, an empirically plausible concern for model misspecification and model uncertainty generates a stochastic discount factor that uniformly satisfies the spectral Hansen-Jagannathan bound of Otrok et. al. (2007).

Quality Overprovision in Cable Television Markets

We measure the welfare distortions from endogenous quality choice in imperfectly competitive markets. For U.S. cable-television markets between 1997-2006, prices are 33% to 74% higher and qualities 23% to 55% higher than socially optimal. Such quality overprovision contradicts classic results in the literature and our analysis shows that it results from the presence of competition from high-end satellite TV providers: without the competitive pressure from satellite companies, cable TV monopolists would instead engage in quality degradation. For welfare, quality overprovision implies that cable customers would prefer smaller lower quality cable bundles at a lower price, amounting to a twofold increase in consumer surplus for the average consumer.

Industry effects of oil price shocks: A re-examination

Sectoral responses to oil price shocks help determine how these shocks are transmitted through the economy. Textbook treatments of oil price shocks often emphasize negative supply, or cost, effects on oil importing countries. By contrast, the seminal contribution of Lee and Ni (2002) has shown that almost all U.S. industries experience oil price shocks largely through a reduction in their respective demands. Only industries with very high oil intensities face a supply-driven reduction. In this paper, we re-examine this seminal finding using two additional decades of data. Further, we apply updated empirical methods, including structural factor-augmented vector autoregressions that take into account how industries are linked among themselves and with the remainder of the macro-economy. Our results confirm the original finding of Lee and Ni that demand effects of oil price shocks dominate in all but a handful of U.S. industries.

Domestic and Multilateral Effects of Capital Controls in Emerging Markets

Using a novel, high frequency dataset on capital control actions in 16 emerging market economies (EMEs) from 2001 to 2012, we provide new insights into the domestic and multilateral effects of capital

controls. Increases in capital account openness reduce monetary policy autonomy and increase exchange rate stability, confirming the constraints of the monetary policy trilemma. Both gross in- and outflows rise, while the effect on net capital flows is ambiguous. Tighter capital inflow restrictions generated significant spillovers, especially in the post-2008 environment of abundant global liquidity. We also find evidence of a domestic policy response to foreign capital control changes in countries that are affected by these spillovers.

Dismiss the output gaps? To use with caution given their limitations

The link between inflation and the output gap is central to the conduct of monetary policy. In this paper, we use a new real-time database for Canada to study various output gap measures. We analyze output gap revisions and assess the usefulness of these gaps in forecasting total CPI inflation and three newly developed measures of core CPI inflation: CPI-median, CPI-trim and CPI-common. We also consider labour input gaps, projected output gaps, and simple combinations of output gaps. We find that, when forecasting CPI-common and CPI-trim, some gaps appear to provide information that reduces forecast errors when compared with models that use only lags of inflation. However, forecast improvements are rarely statistically significant. In addition, we find little evidence of the usefulness of output gaps in forecasting inflation measured by total CPI and CPI-median. These results call for cautiousness when central banks use output gaps to forecast inflation as their usefulness is limited.

Responding to the First Era of Globalization: Canadian Trade Policy, 1870–1913

In this paper we document Canada's trade policy response to late-nineteenth- and early twentieth-century globalization. We link newly digitized annual product-specific data on the value of Canadian imports and duties paid from 1870–1913 to establishment-specific production and location information drawn from the manuscripts of the 1871 industrial census. Our findings reveal a highly selective move towards protectionism following the adoption of the National Policy in 1879. Changes in the Canadian tariff schedule narrowly targeted final consumption goods that had close substitutes produced by relatively large, politically influential domestic manufacturers.

Seeking Safety

The scale of safe assets suggests a structural demand for a safe wealth share beyond transaction and liquidity roles. We study how investors achieve a reference wealth level by combining self-insurance and contingent liquidation of investment. Intermediaries improve upon autarky, insuring investors with poor self-insurance and limiting liquidation. However, delegation creates a conflict in states with residual risk. Demandable debt ensures safety-seeking investors can withdraw to implement a safe outcome, so private safety provision is fragile. Public debt crowds out private credit supply and investment, while deposit insurance crowds them in by reducing liquidation in residual risk states.

The Welfare Cost of Inflation Revisited: The Role of Financial Innovation and Household Heterogeneity

We document that, across households, the money consumption ratio increases with age and decreases with consumption, and that there has been a large increase in the money consumption ratio during the recent era of very low interest rates. We construct an overlapping generations (OLG) model of money holdings for transaction purposes subject to age (older households use more money), cohort (younger generations are exposed to better transaction technology), and time effects (nominal interest rates affect money holdings). We use the model to measure the role of these different mechanisms in shaping money holdings in recent times. We use our measurements to assess the interest rate elasticity of money demand and to revisit the question of what the welfare cost of inflation is (which depends on how the government uses the windfall gains from the inflation tax). We find that cohort effects are quite important, accounting for half of the increase in money holdings with age. This in turn implies that our measure of the interest rate elasticity of money is -0.6, on the high end of those in the literature. The cost of inflation is lower by one-third in the model and, as a result, lower than previously estimated in the literature that does not account for the secular financial innovation.

Sluggish Forecasts

Given the influence that agents' expectations have on key macroeconomic variables, it is surprising that very few papers have tried to extrapolate agents' "true" expectations directly from the data. This paper presents one such approach, starting with the hypothesis that there is sluggishness in inflation and real GDP growth forecasts. Using individual-level data on 29 U.S. professional forecasters from the Survey of Professional Forecasters, I find that some degree of

sluggishness is present in about 40% of inflation forecasts and in 60% of real GDP growth forecasts. The estimates of sluggishness are then used to recover a series of sluggishness-adjusted expectations that are more volatile and, at times, more accurate than the raw survey forecasts.

Nowcasting Canadian Economic Activity in an Uncertain Environment

This paper studies short-term forecasting of Canadian real GDP and its expenditure components using combinations of nowcasts from different models. Starting with a medium-sized data set, we use a suite of common nowcasting tools for quarterly real GDP and its expenditure components. Using a two-step combination procedure, the nowcasts are first combined within model classes and then merged into a single point forecast using simple performance-based weighting methods. We find that no single model clearly dominates over all forecast horizons, subsamples and target variables. This highlights that when operating in an uncertain environment, where the choice of model is not clear, combining forecasts is a prudent strategy.

UPCOMING EVENTS

Bank of Canada – Monetary Policy Communications Conference, 12-14 September 2018
Organizer: FMD-MPAR

Dean Croushore (University of Richmond), 17 September 2018
Organizer: Julien Champagne (CEA)

Emanuel Moench (Bundesbank), 20 September 2018
Organizer: Rodrigo Sekkel (FMD)

Matthias Kehrig (Duke University), 21 September 2018
Organizer: Dmitry Matveev (CEA)

Matthias O. Paustian (Federal Reserve Board), 12 October 2018
Organizer: Romanos Priftis (CEA)

Natalia Ramondo (University of California in San Diego), 19 October 2018
Organizer: Anthony Landry (CEA)

Brent Hickman (Queen's University), 25 October 2018
Organizer: Jason Allen (FMD)

Kevin Lim (University of Toronto), 26 October 2018
Organizer: Ben Tomlin (CEA)

Albert Queralto (Federal Reserve Board), 16 November 2018
Organizer: Martin Kuncl (CEA)

Jonathan Parker (Massachusetts Institute of Technology), 29 November 2018
Organizer: Miguel Molico (FSD)

Decio Coviello (HEC Montreal), 7 December 2018
Organizer: Youngmin Park (CEA)

Fernanda Nechio (Federal Reserve of San Francisco), 14 December 2018
Organizer: Anthony Landry (CEA)